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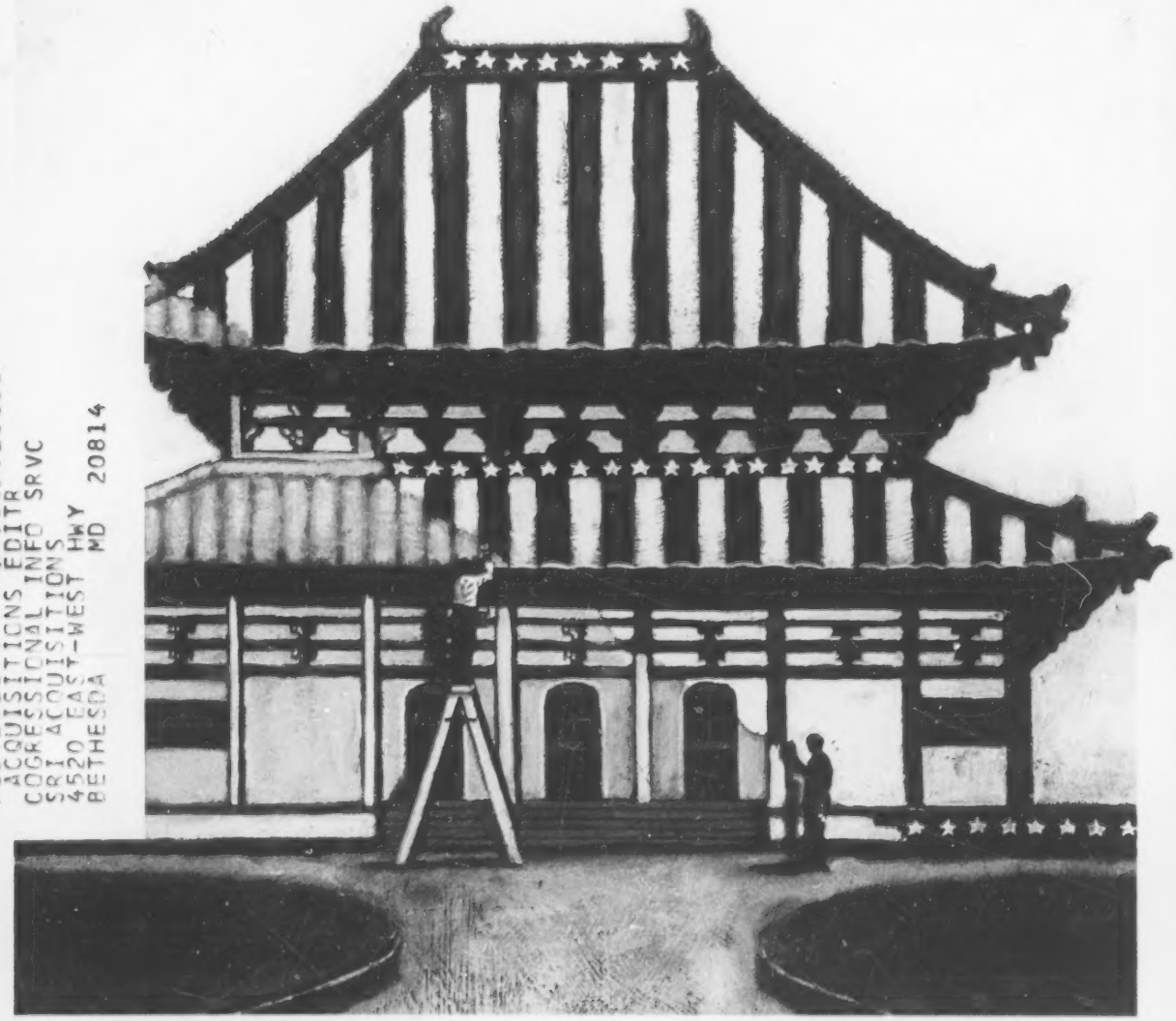
The top 15 industrial distributors and how they grew

Dataproducts: New technology and a new philosophy



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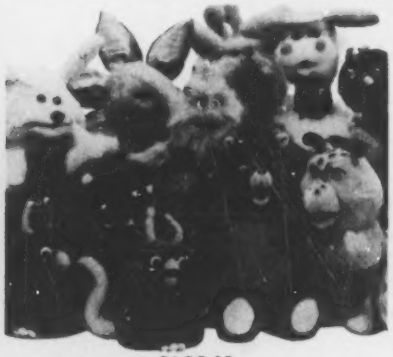
How Japanese companies in America are painting themselves red, white and blue

Electronic Business

VOL. 13, NO. 15 AUGUST 1, 1987

FOR THE MANAGEMENT TEAM IN ELECTRONICS, COMPUTER AND SYSTEMS COMPANIES



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Cover illustration: Scott Gordley

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BPA ABP

Are IBM's big orders a blessing or a curse?

Wyle sees growth in computer equipment. But Jaco blames them for longer leadtimes

For the first quarter of this year, the National Electronic Distributors Association reports that distribution shipments increased 8% with respect to the same quarter a year earlier. By contrast, Avnet's Electronic Marketing Group reported a 5% increase for the same period. Avnet's EMG consists mainly of No. 1 distributor Hamilton/Avnet and sixth-ranked Time Electronics, and accounts for one-sixth of total distribution sales. A larger portion of the increase in sales came from smaller distributors. Is this because it pays to specialize or that Avnet's sales, now less than 8% away from their peak in 1984, have held up during the difficult past two years better than any other distributor's?

The answer to both is yes. The largest among specialists is ninth-ranked Wyle Laboratories' Electronics Marketing Group, which does most of its business in large-scale ICs and in computer equipment. Wyle grew by 8.6% in the quarter that ended April 30, a little better than NEDA's sample of distributors. However, its business had dropped by 29% in the first year of the recession, and it is still more than 10% away from its previous peak of $275 million registered in the fiscal year ended January 1985.

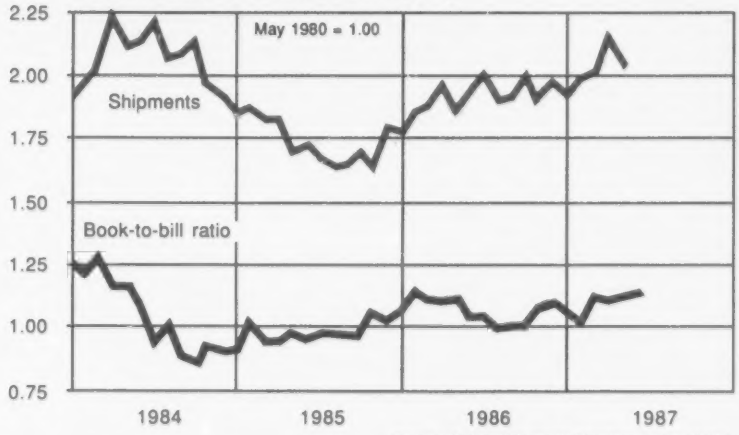
Jaco Electronics Inc., a capacitor specialist which, like Wyle, participates in the sample of industrial distributors that NEDA uses to report sales data, happily points to a 41% increase to $10.5 million in the first quarter. Jaco's president Joel H. Girsky reports a slighly higher level for the second quarter, but tempers this statement by saying that Jaco's sales peaked at $60 million in 1982 and were cut in half the following year. Sales have held roughly until they started growing this year.

This should make Girsky happy, but it doesn't. "I find it disturbing that last year the four top distributors lost money," he says, and claims some knowledge in the bottom line department: "We lost a lot in 1983." The main reason for the loss was inventories out of proportion with sales volume, he explains. Moreover, Girsky worries about the lengthening of leadtimes, an indicator that normally warms up the heart of distributors because it portends sales growth and higher prices. He attributes many component shortages to Big Blue. "IBM is placing a lot of orders," he says.

The impact of some of IBM's orders can be seen in Hamilton/Avnet's leadtimes. The top distributor has an allocation Intel Corp.'s microprocessors and large EPROMs, two very popular types of ICs not only for IBM but also among competitors, that make PC-compatible personal computers. But this does not bother Wyle Labs' president Charles M. Clough. He sees, from Wyle's vantage point as a specialist, many new systems entering the market based on Intel's 80386 32-bit microprocessor, and Clough even sees 10% to 15% growth next year for mainframes.

ALBERTO SOCOLOVSKY

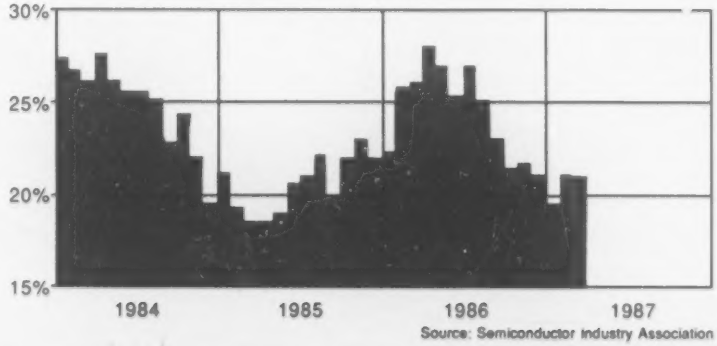
Distribution business index



Source: National Electronic Distributors Association

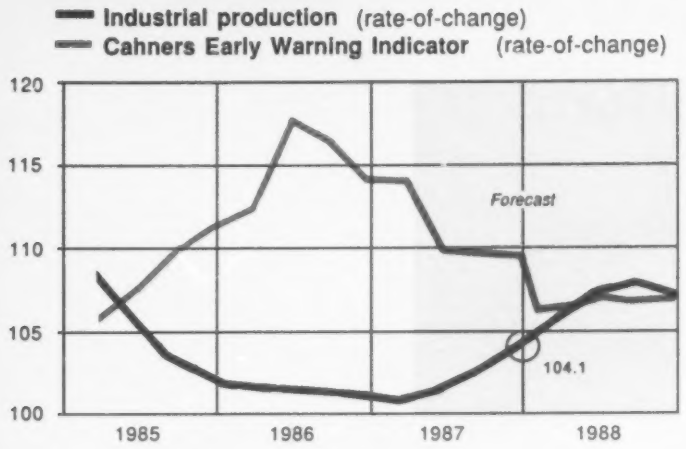
Distributors' share of IC shipments

(Percentage of U.S./Canadian shipments)

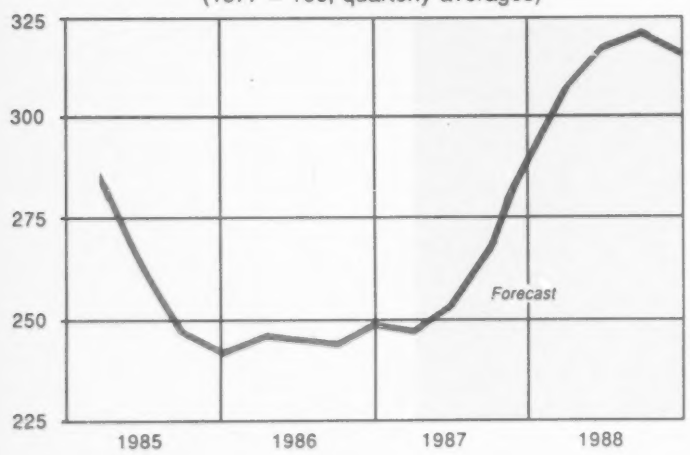


Source: Semiconductor Industry Association

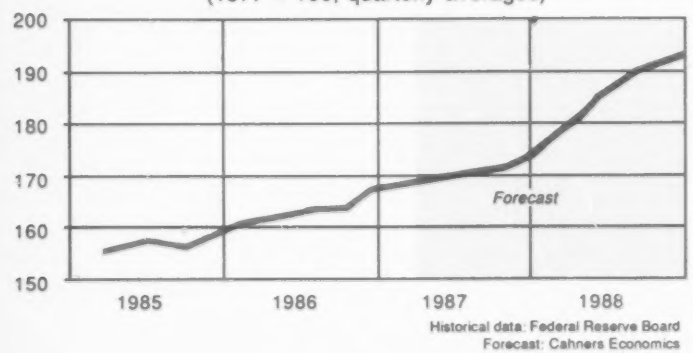
Economic indicators



Industrial production: Electronic components
(1977 = 100, quarterly averages)



Industrial production: Equipment, instruments and parts
(1977 = 100, quarterly averages)



Historical data: Federal Reserve Board
Forecast: Cahners Economics

Steady growth expected

The United States Index of Industrial Production, a coincident indicator of the U.S. economy, has been climbing steadily since the summer of 1986. The fourth quarter was up 0.7% from the prior quarter bringing yearly production up 1%. This year, modest gains are expected to continue through midyear (first quarter production rose by 0.6%) with sharper increases in industrial production expected in the third and fourth quarters.

The Cahners Early Warning Indicator (CEWI) is a weighted average of housing starts, the Dow Jones Industrial Stock Index and the money supply (M2) — deflated by the Consumer Price Index. It forecasts probable business cycles about 12 months in advance. The black curve is a plot of the 12-month rate of change Index of Industrial Production. That is, its change over a 12-month period can be determined by comparison with the line at 100. For example, the 104.1 level forecasts using the CEWI for the end of this year indicates that the average for all of 1987 should be 4.1% above 1986.

Readers can obtain a brochure explaining the CEWI method from Cheryl Patstone, editor of the "Electronic Business Forecast" newsletter, Cahners Economics Department, 3031 Tisch Way, Suite 100, San Jose, Calif. 95128.

Electronic components

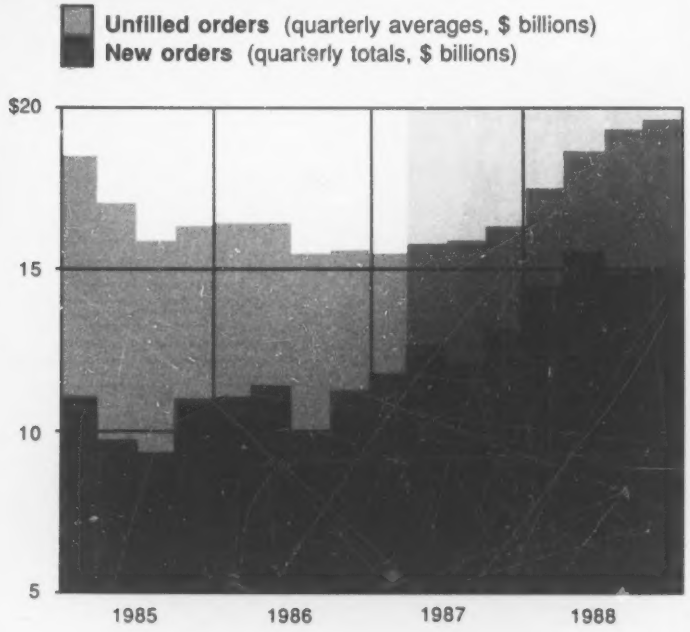
Component production, which had risen more than 2% in last year's fourth quarter, showed a slight decrease of 0.5% in the first quarter of 1987. But even as output was slackening, orders from computer makers and other major component end users were pushing ahead at an unexpectedly strong pace. This suggests that component production will experience more rapid growth as the current year progresses. By the end of 1987, output should be running nearly 20% ahead of the level at the start of the year, and this brisk uptrend will produce an overall annual growth rate of 7.9% over 1986. The industry is expected to remain on an upbeat next year, with growth accelerating to 19.6%.

Equipment, instruments and parts

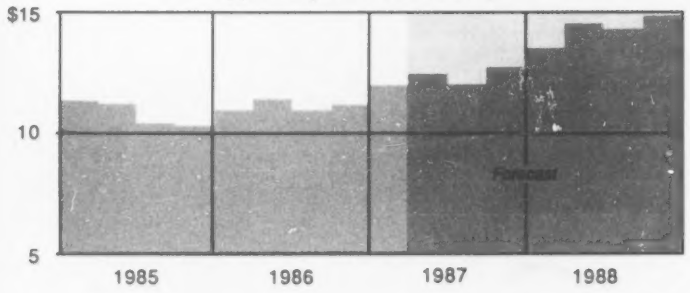
Instrument production shot up 2.8% in last year's fourth quarter, when U.S. businesses were accelerating their purchases to beat the 1987 tax law changes. Because this impetus was absent in the early months of this year, the overall pace of market growth cooled. First quarter production inched ahead just 0.7%, and early reports for the second quarter have pointed to a similar rate of increase. Gains are likely to remain slow-paced through summer, but a revival in capital spending should cause the recovery's tempo to quicken late in the year. Production is expected to post a modest 4.9% gain for 1987.

Electronic components

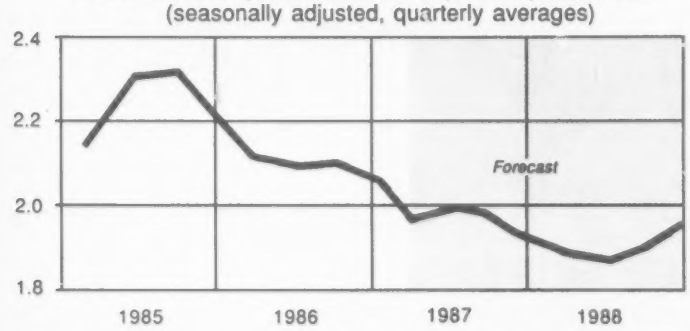
(SIC 367)



Electronic components: Shipments
(quarterly totals, $ billions)



Electronic components: Inventory-to-shipment ratio
(seasonally adjusted, quarterly averages)



Historical data: U.S. Department of Commerce
Forecast: Cahners Economics

New orders

Component manufacturers received $11.7 billion in new orders in the first quarter, up 5.2% from the prior quarter. This was the highest volume of orders since 1984's third quarter and was nearly $2 billion above last summer's figure. While part of the advance in early 1987 was caused by inventory replenishment, this was overwhelmed by the effect of stepped-up production for small computer systems and other types of electronic end equipment. These production gains are expected to keep the component market on a course of gradual recovery through most of 1988. Orders in 1987 are forecast to increase 14.5%. Next year, a 21.3% gain is expected.

Unfilled orders

Component manufacturers' order backlogs amounted to $15.52 billion at the end of the first quarter, down from the $15.63 billion in the prior quarter. This brought backlogs close to last summer's cyclically low level. The outlook for the remainder of the year is more favorable. Early second-quarter reports suggest that the volume of unfilled orders will begin to push upward, showing a gain of $300 million. This trend will be sustained throughout the rest of 1987 and 1988, as the recovery in U.S. industrial markets gains steam. By the end of this year, backlogs will be about $1 billion above present levels.

Shipments

First-quarter shipments of electronic components totaled $11.8 billion, up from $11.0 billion in the previous quarter. This was the strongest level of shipments since 1984 and was nearly 15% ahead of the cyclical low in late 1985. Recent order gains and evidence of improvement in the industrial sector make prospects for sustained growth over the next 18 months quite good. Even though a seasonal summer slowdown is likely this year, activity is expected to match first-quarter levels. Toward year-end, the tempo should pick up sharply, which will carry annual shipments to $48.6 billion, a gain of 10.5%.

Inventory-to-shipments ratio

The ratio of component manufacturers' inventories to shipments fell slightly in the first quarter, to 1.97 from an average of 2.06 in the previous three months. This decrease was a result of continued tight inventory controls by manufacturers and solid, expansionary gains in shipment volumes. On a seasonally adjusted basis, total inventories dropped by 0.2% during the quarter, while shipments posted an overall increase of 4.6%. The I/S ratio is expected to hold relatively stable through the summer, but will then edge down for several quarters as the unfolding expansion brings proportionately larger gains in shipments than in inventories.

COMMUNICATIONS

Datacommunications applications spawn new fiber optics markets

U.S. chip makers and other component makers are gearing up for a market which is growing 35% a year

Fiber optics — the newest transmission medium of telecommunications — is finally gaining ground in the field of datacommunications, thanks, in part, to the Fiber Distributed Data Interface (FDDI) standards for fiber-optic local area networks. Most of these standards are expected to be finalized this year.

Nailing down these standards "will help in terms of stimulating the implementation of fiber optics in the datacommunication world," says Warren Anderson, director of marketing at connector company Amphenol Corp.'s Fiber Optic Operations in Lisle, Ill. According to Anderson, "FDDI will bring a flurry of new applications and new systems."

Already, the U.S. market for fiber-optic datacommunications products — including transmitters and receivers, connectors and cable — has reached $137 million, and the future is looking bright. Growing at a compounded annual rate of 35%, this market is expected to reach $812 million by 1992, according to Kessler Marketing Intelligence, a Newport, Rhode Island-based research and consulting firm that specializes in fiber optics.

But this may be only the tip of the iceberg. FDDI will set specifications for both hardware and software products that address both the physical and data-link layers of the Open Systems Interconnect (OSI) model — from defining the characteristics of the transmitters and receivers, which switch electronic signals to light and vice versa, to defining protocols that will allow terminals to access information on the network.

All of this translates into a variety of opportunities for vendors from semiconductor manufacturers — which are already developing FDDI chip sets — to computer manufacturers — which need to develop faster hardware and software.

In computer applications, fiber networks offer more capability than the data-processing equipment they serve. Fiber networks that adhere to FDDI standards will transmit information at a rate of 100 megabits per second. Hence, at the desktop level, fiber optics is "a solution waiting for a problem," comments Albert Bender, president of FiberCom Inc., a Roanoke, Virginia-based manufacturer of fiber-optic networking systems, whose revenue doubled during 1986 to $11 million. Today, he adds, "we're waiting for computers to catch up to what we can do."

> Acceptance of any standard involves more than publishing specifications. De facto standards are set by the proliferation of products following those standards

That day may come by 1992, according to Howard Salwen, chairman and chief technical officer at Proteon Inc., a local area network vendor based in Westborough, Mass. By then, Salwen foresees "PCs everywhere," and the advent of 10 million instructions per second (MIPS) machines. While computer manufacturers are playing catch-up, vendors of fiber-optic products, from components to systems, are not standing still.

Fibronics International, a vendor of fiber networks based in Hyannis, Mass., has already announced an FDDI LAN. At about $70,000 per node, some say the product is a bit pricey. But, as Gene Milligan, FDDI committee chairman and the manager of business and product planning at Magnetic Peripherals Inc., Oklahoma City, Okla., points out, acceptance of any standard involves more than publishing a set of specifications. De facto standards are set by the proliferation of products that follow those standards. Fibronics' product is an indication that vendors are already giving credence to FDDI. Even Digital Equipment Corp., which has one of the largest installed bases of Ethernet networks, is not ignoring what could become the data networking scheme of the future. This past spring, the Maynard, Massachusetts-based company ran a full-page employment advertisement in a Boston newspaper which indicated that DEC was putting together an FDDI staff.

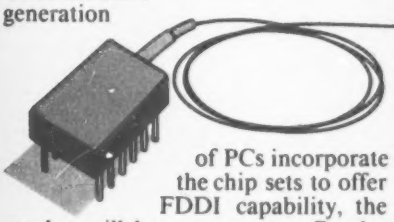
In the chips

Beyond the offerings of network vendors, Milligan points out that the availability of very large scale integrated (VLSI) FDDI chip sets will be a "key aspect" in promoting wide acceptance of this standard. A number of semiconductor manufacturers are already working on the development of these chip sets, including California-based Advanced Micro Devices Inc. (AMD) in Sunnyvale, and National Semiconductor Corp., in Santa Clara.

The potential customer base for these VLSI components is widespread, from the makers of transmitters and receivers, to fiber-optic network system houses, to manufacturers of computers and peripherals. Proteon's chairman, Salwen, suggests that the market for these chips could eventually become as significant as the market for microprocessors. In fact, Salwen says he is already "waiting for the opportunity" to buy these components, and he is not alone.

FiberCom's Bender believes that the sophistication in fiber-optic datacommunication networks is in the

electronics. Consequently, the company designs its own custom integrated circuits, which are manufactured by Gould Inc.'s AMI Semiconductors, LSI Logic Corp. and Toshiba foundries. Estimating first generation FDDI chip sets being shipped at a rate of about 50,000 units a month, at a price of about $100 a set, he foresees a $5 million a month market. Once the next generation



of PCs incorporate the chip sets to offer FDDI capability, the market will be even greater, Bender adds.

Selling chips to network systems houses and the manufacturers of communication servers will represent a healthy market, suggests Steven Dines, director for strategic development for AMD's Logic Products Division. But the real bounty, Dines adds, will come from sales to data-processing and workstation vendors.

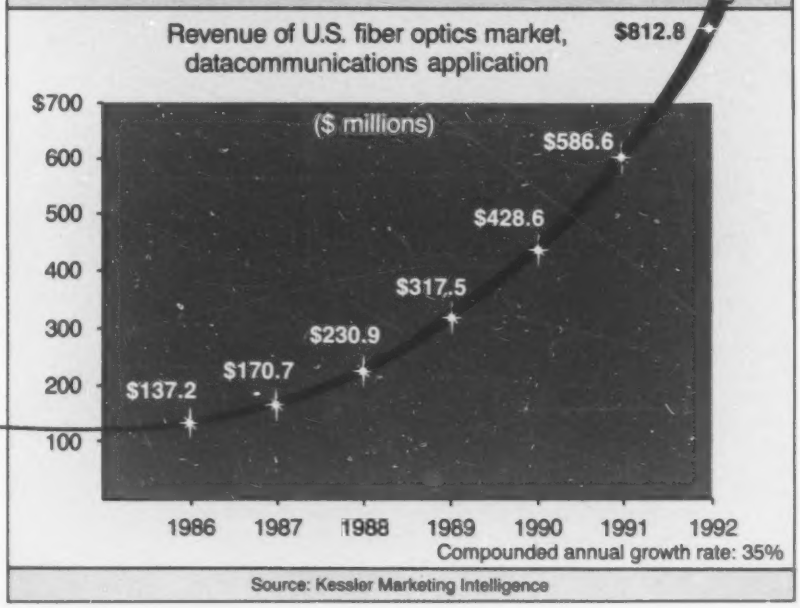
Some workstation companies agree. When the FDDI specifications are finalized, Apollo will be "ready to move very quickly" toward introducing FDDI-compatible product, according to David McCrabb, senior product manager for network products at Apollo Computer Inc. in Chelmsford, Mass.

A connector consensus

Standards are also an issue for connector manufacturers, many of whom are eager to grab a piece of this emerging market. AT&T's patented ST connector already is turning into a de facto standard within the fiber optics marketplace, according to Joseph Denny, senior product planner at the company's Norcross, Ga., facility. Since February 1985, when the connector was introduced and enough of its specifications were published to allow other vendors to build interchangeable ST connectors, a number of other vendors, according to Denny, have developed "ST-compatible" connectors including: AMP Inc., Dorran Photonics Inc./3M, GTE Corp., Optical Fiber Technologies Inc. (OFTI) and Siecor Corp.

Today, AT&T is also working on an FDDI connector. Denny expects, however, that the eventual proliferation of FDDI connectors will have very little impact on revenue from its ST product. The FDDI standard is very specific in terms of what can or cannot plug into the network, he says, but ST connectors can be used in a myriad of networking situations. Amphenol's Anderson agrees. "FDDI will cause the market to grow," he says, but rather than cut into existing component segments.

The fiber optics market blossoms as datacommunications users see the light



Source: Kessler Marketing Intelligence

> The overall market for fiber-optic connectors is currently valued at $52 million, and is expected to reach $145 million by 1992

The overall market for fiber-optic connectors is currently valued at $52 million, and is expected to reach $145 million by 1992, reflecting a 24% compounded annual growth rate, according to Kenneth Fleck, president of connector market analysis firm Fleck Telesis Inc., in Huntington Beach, Calif. Fleck says that although telecommunications has traditionally represented two-thirds — 60% — of the market over the past five years, "datacomm will become an increasing share of this pie."

However, as the market shifts, so might the customer base. Currently, approximately 70% of Amphenol's datacommunications fiber-optic connector revenue comes from systems houses such as Codenoll Technology Corp., FiberCom, Fibronics and Siecor, estimates Amphenol's director of marketing Anderson. But, as the embedded base of fiber-optic networks expand and technology reaches the point where capabilities will be cost effectively embedded in computers, Anderson expects the customer base will eventually shift to computer and peripherals manufacturers such as Data General Corp., Digital Equipment Corp., IBM and Wang Laboratories Inc.

CAROL SUBY

SEMICONDUCTORS

Chips for toys: A market built by demanding tots

Toy makers last year shipped $543 million worth of electronic toys. That's not a market IC makers can ignore

There is no such thing as a sure bet in the toy business. Ask any semiconductor vendor and he'll say that the payoffs can be tremendous, but that the risks can be just as great.

What is the allure, and why are an increasing number of semiconductor vendors entering the high-technology toy market? The reason is numbers — 60 million consumers of toys versus six million for personal computers.

Toys are also sexy — flashy advertisements, heavy marketing dollars, and a whole slew of trendy teenagers with large disposable incomes ready to consume the latest hit. The average family, each year, spends $200 per child on toys. In spite of the relatively high price point of some of the new and popular electronic toys (often between $75 and $150), that is a lot of toys.

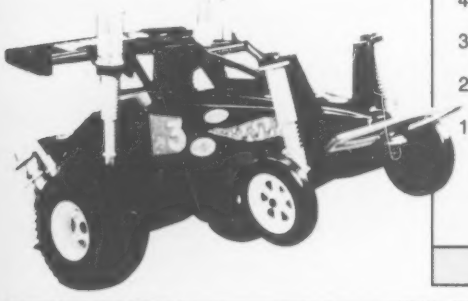
And the number of electronic toys is increasing, and will likely continue to increase over the next few years. Estimates from market research firm Dataquest Inc. indicate that shipments of electronic games in North America will grow from $543 million in 1986 to $691 million in 1990. When a product does hit, it can hit big. "You can go from zero to 200,000 units in no time at all," says Zilog Inc. president and chief executive Edgar A. Sack.

In fact, almost all of the major toy manufacturers have a semiconductor-intensive offering of some sort, and a number of smaller companies, including Lewis Goloob Toys of South San Francisco, and Worlds of Wonder Inc., Fremont, Calif., have made a niche for themselves with electronic toys. "The only way high-tech toys would go away is if the market decides they are not any good," says Worlds of Wonder engineering vice president David Small. Small says that his company's IC usage has skyrocketed since introducing its first electronic toy three years ago.

What started out as the video game craze in the early 1980s with companies like Atari Corp. has expanded to include dolls that talk, souped-up versions of video games with enhanced graphics, radio-controlled toys and infrared-sensitive toys. The semiconductor content of each of these products varies, from less than 5% of the wholesale price to 20% or higher, depending on the type of toy and the target audience.

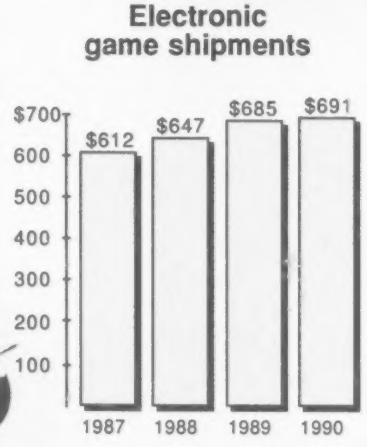
According to Standard and Poor's Corp. toy and electronics analyst Paul Valentine, the electronics industry has benefited from recent changes in the toy industry. "The toy industry is shifting from fantasy to high-tech toys," he says. "Toys are a fashion business, and from period to period tastes change and this is one of those times." However, Valentine is disappointed by sales of electronic toys, which he says have been relatively flat. He attributes this to the relatively high price tags for most products.

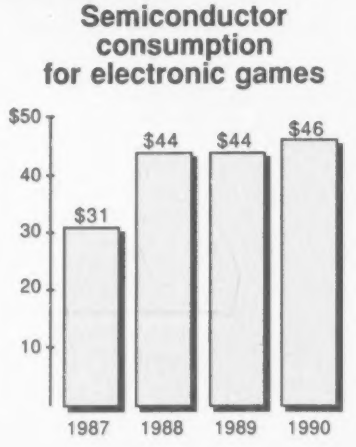
But breaking into this market may be difficult for the uninitiated. For a



The toy business is big business

Estimated North American market ($ millions)





Source: Dataquest Inc.

semiconductor vendor to effectively compete, he must do four things, according to Zilog's Sack: Keep quality up, costs down, and turnaround times short, in addition to keeping a tight rein on inventory levels. As Stan Katz, National Semiconductor Corp.'s microcontroller strategic marketing manager, points out, the annual New York City Toy Fair, which is the industry's primary trade gathering before the Christmas shopping season begins, occurs in early February. "At best, we get some insight into the products in early February, and then the toy companies go ahead and turn us on [to what they are planning]," Katz says. "We take our product line and have one month to write the code, sometimes billions of pieces, and we have to work with all the pressures of delivery dates, costs and reliability."

Commodity items

Probably the best way a semiconductor vendor can control the pressures is to work with standard, off-the-shelf products in order to limit the investment. NEC Corp., for example, claims to be the world's largest merchant of 4-bit microcontrollers, selling over 60 million of those chips per year.

But, despite the differences, toy companies buy semiconductors just like any other company, says Axlon Inc. president Nolan Bushnell, also founder and former president of Atari Corp. "One area [in which] we are different, however, is we don't have a huge budget. The toy business is cost competitive, and you want more technology for fewer dollars," says Bushnell. Toy companies also uhave a broad technology base, according to Worlds of Wonder's Small. His company buys parts that span the range from microprocessors and microcontrollers, to digital signal processors and infrared technology. Toy manufacturers are heavy users of semicustom parts, says Small, because of the short leadtimes to market. As products mature, parts go to full custom to bring prices down.

However, the collapse of the video game market in 1981-1982 has left a sour taste in the mouths of several semiconductor companies. "This company was badly burned in providing a chip for [an electronic] chess game," Zilog's Sack recalls. "It lost its taste for the toy market, but we are now putting our toes in the water again. But we are not going to overextend ourselves, and we don't want to go full bore all at once." The bottom line in the toy market, Sack stresses, is that it is seasonal and trendy.

Hit or miss

The most difficult issue facing semiconductor vendors trying to enter the market is the marketing-driven nature of the toy business. Toys are faddish, and a hit product one season is more often than not dead the next. Oftentimes, one hit product is enough to make a tidy profit, but the question is, how can a supplier not in the toy business judge what is going to be a hit?

National's Katz says that he has stopped using his intuition, and instead reaches for companies which have a known track record that he can trust. "The hardest area to be in is toys," he says.

Texas Instruments Inc., however, may have solved this problem by viewing its relationship with toy manufacturers as almost a joint development situation — with TI providing the technology and the toy companies supplying their knowledge of the market.

"We have been working with Worlds of Wonder for over a year on a project [the "Julie" doll]," adds TI's voice applications manager Gene Frank, "and it ended up being a joint effort to bring together four or five different aspects of technology — including speech recognition and synthesis, digital signal processor technology and a lot of systems capabilities combining together to do a design."

Some semiconductor vendors also feel that participation in the toy market — to a limited extent — can help offset the cyclical nature of more technology-intensive businesses. Some analysts theorize that during a recession more toys are bought than at other times. Consumers buy toys, perceived as "soft goods," during a recession because of the high price of consumer "hard goods" — televisions, stereos, automobiles, etc. "Toys are countercyclical," says Zilog's Sacks. "You are selling low-end products while big ticket items are in the tank. That's another reason manufacturers must balance their businesses. When military is down, toys are up."

VALERIE RICE

New toy fads

First there was the landmark video game Pong, then other personal arcade games, and then the great fall from grace. Finally, about two years ago, Teddy Ruxpin from Fremont, California-based Worlds of Wonder Inc., came along and engaged the minds (and pocketbooks) of children.

In terms of semiconductors, voice- and speech-recognition chips are currently the hot items, and as vocabularies increase, memory contents will likely increase as well. Talking dolls are the current fad, as well as any stuffed toy that allows interaction such as Axlon Inc.'s Petster line. Teddy Ruxpin has a whole family of products now, and Worlds of Wonder is said to be coming out with a new doll called "Julie" which features both speech recognition and synthesis. Mattel Inc. has a baby doll that actually ages from 6 months to 2 years of age by making different sounds and gestures.

Other hot areas are infrared-sensitive games such as LazerTag, from Worlds of Wonder, and Photon. Television interactive games are probably the hottest new item this year and are of a somewhat different breed than video games. Axlon Inc.'s Tech Force is a series of remote-controlled, programmable robots that can be manipulated either from a computer console or from sounds generated from a cartoon series produced by Axlon called "Tech Force and the Moto Monsters." Although Axlon is not sure when it will be able to broadcast its cartoon series (and certain parents' groups have raised objections to the concept) there are other companies planning similar entries including Mattel's Captain Power. Captain Power is an interactive game and cartoon where children can shoot laser guns at characters in the cartoon.

"Television entertainment games will be with us until the cows come home," says Axlon president Nolan Bushnell. But beware, high-tech toys may not be in the rage forever, Standard and Poor's Corp. analyst Paul Valentine predicts, because, he says, there are a number of very innovative toys on the horizon that don't use semiconductor chips at all. □

MANAGEMENT

Japan in America: Living in the U.S.A.

Japanese companies are racing to develop U.S.-flavored subsidiaries. But mixing sushi and hamburgers isn't easy

By Mike Leibowitz

The race is on to Americanize. Major Japanese industrial electronics firms have begun staffing their middle-level and upper-level U.S. positions with Americans — positions previously held by Japanese nationals. The Japanese firms have also started to open U.S. manufacturing plants and engineering centers. And they vow that this effort to look and act as American companies do is only the beginning.

Actually, the Americanization process is part of the larger goal of becoming global companies, according to Japanese executives. As examples, they point to multinational companies, such as IBM and Philips, which research, develop, manufacture and market their products in major market locations around the globe using local labor and management. The Japanese see that global companies are viewed as "good citizens" of various nations and can better address the specific needs of local markets.

In their biggest market — the United States — the Japanese call their efforts to become global "Americanization." Americanization not only means setting up local plants and engineering labs, but it also involves management: an area where the Japanese feel a particular urgency.

Americans, they say, are needed to play a new role in Japanese companies — that of marketeers — as their subsidiaries begin to seriously address the needs of U.S. customers. American executives and managers are also necessary to forge alliances with American companies and to build and manage the plants and engineering organizations. And Americans are required to set the subsidiary's direction in the difficult political and legal environment which exists for many Japanese companies in the States.

But possibly the most compelling reason to Americanize, some executives admit, is public relations. Faced with boiling-level trade tensions, Americanization helps to satisfy an angry Congress and American public who are beginning to see Japanese companies, which have been grabbing American markets, finally "turning American."

> Faced with boiling-level trade tensions, Americanization helps to satisfy an angry Congress and American public

"We must be recognized as a good American company, a good American citizen" says Tsuneo Tanaka, president of Hitachi America Ltd. "Especially in this very difficult period of trade friction."

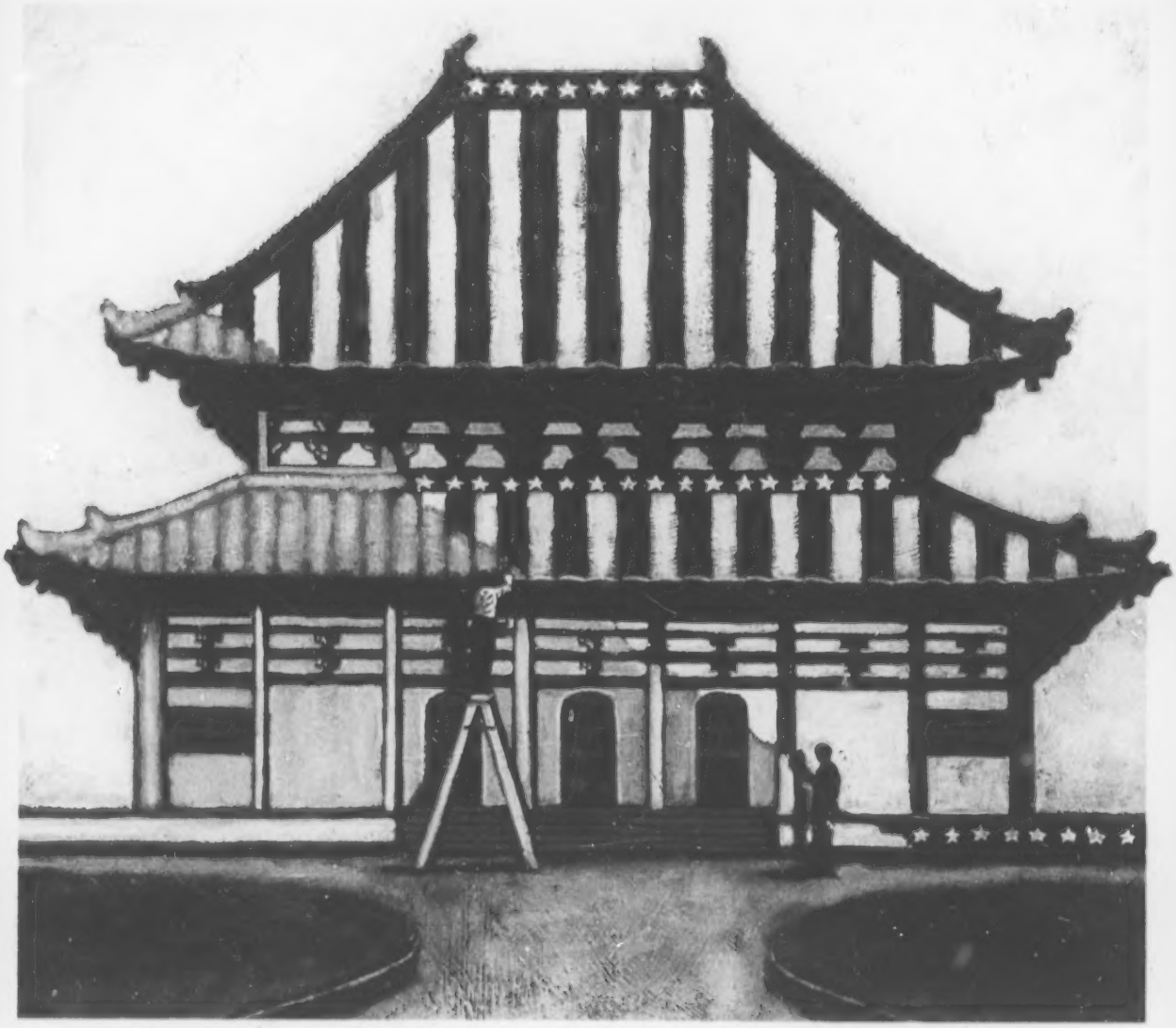
In the interest of Americanization, Hitachi Ltd. — which had 1986 U.S. sales of $3.7 billion and employs 3,500 Americans — has consolidated its five separate U.S. manufacturing subsidiaries into its main U.S. sales and marketing subsidiary, Hitachi America Ltd. The purpose, says president Tanaka, is to enable the subsidiary to expand into a standalone "Americanized" company. And as a keystone of this Americanization plan, Tanaka says that he will replace the Japanese general managers of 10 sales and marketing divisions with Americans during the next five years.

Fujitsu Ltd., which had U.S. sales of $1.1 billion in 1986, is considered by many to be at the forefront of Americanization among Japanese industrials. The company employs 4,000 Americans, including 800 staffers employed in a recently established joint venture with GTE Corp. Fujitsu America Inc. — the company's largest subsidiary and the one responsible for sales, marketing and some manufacturing of all of Fujitsu's nonsemiconductor and electronic component products — already has six American division and organization heads, out of a total of nine, not including its joint venture. In addition to gradually expanding manufacturing and engineering efforts in the United States, Masaka Ogi, Fujitsu America's president, expects to place even more Americans in executive positions.

Important plans

These plans are important because, increasingly, more American managers are finding themselves drawn to Japanese companies. For many managers, U.S. subsidiaries represent the new, wide-open job frontier. While American companies have been laying off and slimming down, Japanese companies have been expanding their operations in the States.

Once hired, an American manager can count on staying at the company. Whether the American joins a new division that finds difficulty getting off the ground or an established division that faces a downturn in business, Japanese companies tend to re-



Japanese companies in America paint themselves red white and blue.

main committed to their markets and their employees.

Other reasons for climbing aboard, American managers say, is the desire to learn how Japanese companies work and to further their own careers either within or outside that company. Many managers believe that working for a Japanese company increases their future value in the job market.

But, some managers cite the challenge of helping to build a business as what attracted them to a Japanese firm. John Familetti left his general manager's post at Penril Corp.'s Data Communications Division four years ago to start up Fujitsu America's Telecommunications Division in a rented office in Virginia. With the help of a Japanese engineer he devised a business plan, got it approved, and has grown the sales and marketing operation into a 170-employee division. Familetti, 55, says that Fujitsu's commitment to the market and the likelihood of success made the opportunity to start the division seem particularly desirable.

William Gsand, 43, joining Hitachi America's Semiconductor and I.C. Division as vice president, got himself aboard a $35 billion company that he says is best positioned to grow in the turbulent semiconductor business. "I think you're going to see the big Japanese companies of this industry dominating over the next five years," says Gsand, who left General Instrument Corp. where he was a vice president for marketing in the microelectronics division.

A critical assessment

But, even though Japanese companies expand their operations in the United States and hire American middle- and upper-level managers, critics question whether this is really "Americanization."

"Where are we on Americanization?" asks Clifford Clark, a former Stanford University professor of international management and consultant to Japanese companies. "On a scale of one to 10 we are a two."

"The doors and the windows and the buildings are physically the same [as in American companies]," says William Morrison, who spent 18 months with Fujitsu Microelectronics Inc. as a marketing manager. "Beyond that, I don't believe that the Japanese companies in the U.S. are Americanized whatsoever."

"I don't believe it for a minute," says Matthew Crugnale of Crugnale & Associates, a marketing consultant to Japanese firms, when asked

Scott Gordley

whether U.S. subsidiaries are Americanizing. "I think the company will have an American coat, but a Japanese shirt and underwear."

The reason for the low marks on Americanization, critics claim, is that even though many Japanese companies have placed Americans in middle- and upper-level management positions, they are given little control over the operation and direction of the subsidiary. They are being asked to fit within a fundamentally Japanese management system, which keeps the subsidiary tightly coupled to the Japanese parent. Critics say that it is the actual authority which the Japanese give to American managers, not the American-manager head count, that determines effective Americanization.

"When you get down to the nitty-gritty of what Americanization is," says Clark, "it is a decision-making process that gives authority to the American input. The Japanese won't let [an American manager] make decisions. You get all the responsibility. You don't get any authority."

American managers at U.S. subsidiaries are often given far less authority than their titles imply, according to critics. They point to the fact that Japanese nationals in the United States and Japan tend to influence many decisions that a manager may make, ranging from personnel hiring and promotion, product specification, advertising and pricing to approving a subordinate's travel plans.

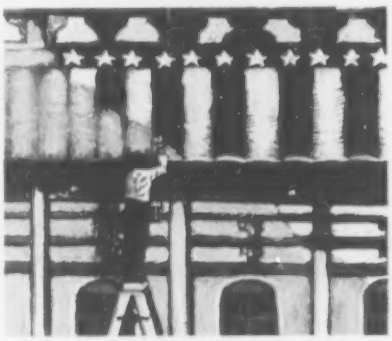
Clark cites an example: an American finance manager of a Japanese firm's U.S. subsidiary who is unable to sign checks. "He's frustrated as hell," says Clark. A Japanese clerk signs all of the checks.

William Garraty, vice president and deputy general manager of Hitachi's Telecom Division, acknowledges that his authority in personnel decisions is lower than it would be at an American company. At a U.S. company, he would be able to grant promotions, raises and job changes. At his division, however, the Japanese general manager makes decisions such as these autonomously. "It tends to come down as an edict," says Garraty. In the Japanese culture, he explains, "the top manager is supposed to know his people, know their strengths and weaknesses, and doesn't need much help in making those decisions."

Despite what appears to be acceptance of the Japanese culture by many American managers at U.S. subsidiaries, lack of authority still produces frustration.

"You would expect that there are certain areas in which you have ultimate authority — that you shouldn't even consider copying anyone else on certain decisions," says Hitachi's Gsand. However, as a courtesy, you do, says Gsand. "Many times, that courtesy is returned by a [response]: 'We should study that further before we make that final decision.' "

Unfortunately, granting the authority necessary for Americanization is not a simple task. For one thing, some of the denial in authority is legitimate. Many functions of U.S. subsidiaries are tightly woven into the operations of the parent company. For example, information necessary to specify new products or modifications to existing products — which are engineering and manufacturing-based decisions in a Japanese company — reside in Japan. The ability to quote aggressive pricing and delivery of commodity products depends on a firm's other worldwide commitments and financial objectives.



According to critics, American managers at U.S. subsidiaries are often given far less authority than their titles imply

But some of this lack of authority is fundamental to the Japanese consensus management system, which shuns individual decision-making in favor of a heavily detail-oriented, bottom-up, team approach. Consensus management involves consultation and information-sharing among many individuals. Proponents say that it is the best way to make decisions. Opponents say that it is painfully slow and inadequate for coping with fast-moving markets. American managers, however, have no choice in this issue, they must adopt consensus management. It is a fundamental part of the culture that the Japanese have exported to their U.S. subsidiaries.

Others say that the big problem holding back authority is a distrust of American managers by the Japanese. According to Vladimir Pucik, professor of international management at the University of Michigan, "lack of trust" is the most common complaint voiced by American managers working for Japanese firms.

Do the Japanese actually distrust their American employees? "Oh yes — no question about it," contends Pucik, who studies management problems at U.S. subsidiaries. Distrust is related to a fundamental difference in culture, according to Pucik. The Japanese tend to view the average American, who works shorter hours and who often changes jobs every few years, as being a less-dedicated, short-term employee. The Japanese, in contrast, typically spend their entire careers at the same company. They are naturally wary of trusting someone who may soon leave to go to a competitor, says Pucik.

Initial credibility

American managers complain that the problem of getting authority and information is most pronounced in the initial "credibility-building period," during which, American managers strive to build relationships and demonstrate competence and dedication. The period lasts between one and three years, according to American managers.

Actually, credibility-building is an ongoing process, says Michael Brown, Western regional manager for Hitachi America's Semiconductor and I.C. Division. "The longer you're here the more trust and confidence they have in you," says Brown. "Five years is one step, 10 years is another. After 20 years they trust you — they figure you're going to be around."

Vice president Gsand, after spending one year at Hitachi, says that his Japanese boss still demands detailed proof that issues are being watched. "Rather than me saying: 'Don't worry about it, it's being taken care of — the detail has to be there," says Gsand. He says that the Japanese do not assume that "this guy has got the experience — he understands his

market — we should trust him."

And Gsand, second in command at his division, says that obtaining the information necessary to do your job is sometimes difficult. "If there's a question asked, [Americans] will give four answers to that question. The Japanese will give half an answer," says Gsand. "Many times you'll get an answer exactly to the question you asked, without any expansion." This, says Gsand, makes it difficult to make decisions that require a great deal of information.

Gsand is next in line for the general manager's position at his division, but he accepts these frustrations as part of working for a Japanese company. He says that these difficulties are more than outweighed by the opportunities that a Japanese company provides to an American manager.

But some managers are not that patient. Clark cites an example of a particular Japanese company that has a 40% turnover rate among its American managers. According to the consultant this is due to a lack of authority and trust, slow promotion, and lack of training given to American managers.

Actually, turnover of U.S. managers at many Japanese firms is "a vicious circle," that feeds upon itself, says Pucik. Authority and trust are given to American executives and managers who stay for relatively long periods of time at Japanese companies. But, if Americans do not receive authority and trust soon enyough, then they leave. This makes the Japanese even more reluctant to invest

Fujitsu's happy story

Fujitsu Ltd. has a good story to tell America. Between its two operations in the United States, Fujitsu America Inc. (FAI) and Fujitsu Microelectronics Inc., the company appears to be ahead of the rest of the pack in Americanizing. The operations are proud of their mostly American management and are eager to show off.

Masaka Ogi, FAI's president, proudly points to FAI's low management turnover, which he attributes partially to FAI paying its managers well. "I think we have to give some more compensations to [American managers] because they are working under a different culture."

Some happy executives at FAI say that Fujitsu has simply been better at integrating the Japanese consensus management style into its American organization. They mention training provided by Fujitsu's Hawaii-based Japan-America Institute of Management Science as one of the factors that has helped employees adapt.

Others at the company point to an extensive interviewing process that FAI uses to weed out managerial candidates whose personalities will not fit into FAI's culture. According to Arthur Gemmel, senior vice president who oversees the human resources effort at FAI, a candidate will often meet with eight people over a period of three days. On the second and third days, says Gemmel, "We're interviewing for personality." Adaptability, patience and interest in working in the Japanese culture are the things that executives look for in deciding whether or not a candidate will fit in. According to Gemmel, all eight Japanese and American interviewers must agree on the choice of manager. "If anyone says no than he's out," says Gemmel.

Concerning further Americanization plans, president Ogi says that he expects to move quickly in transferring research and development activities to the United States, and he intends to gradually increase the level of manufacturing done at existing facilities during the next three years. He would not state specific plans, however. On raising the percentage of Americans at the executive level, Ogi says that this may increase another 10% to approximately 65% during the next four years.

Senior vice president Gemmel, who often acts as FAI's spokesman on Americanization, does not think FAI has any more to gain by replacing the Japanese nationals in the company with Americans. He puts FAI's current Americanization level at almost a nine on a scale of one to 10.

"I'm not sure that I want to go beyond nine," says Gemmel. "The fact of the matter is, we are Japanese-owned. We need the Japanese influence here, we need the communication bridge to Tokyo, and we need to understand Fujitsu Ltd.'s philosophy as it evolves. We need to understand the product development taking place in Japan. We need a senior Japanese influence pushing for Fujitsu America at the most senior levels in the company." □

Fujitsu Ltd.

Worldwide 1986 sales:
$12.3 billion
(Fiscal year ended March 1987)

Number of employees worldwide: **84,000**

U.S sales:

1986 **$1.1 billion**

1985 **$0.8 billion**

Total number of employees in U.S.: **4,134**
(includes 870 employees in Fujitsu-GTE joint venture, begun 4/87)

Source: Fujitsu subsidiaries, Dataquest Inc.

MASAKA OGI, president of Fujitsu America: "I think we have to give some more compensations to [American managers] because they are working under a different culture"

their trust and training in the next manager because they fear the same thing will happen.

All of this tends to discourage aggressive managers who hire on expecting to pursue a fast track at a Japanese company. John Familetti, senior vice president and head of Fujitsu America's Telecommunications Division, gives a bad mark for a job candidate having "an ambition that is bigger than all outdoors."

Charles Kissner, vice president of Fujitsu America's Switching Development Division warns: "A typical manager of a start-up company will have some problems integrating into this culture."

Careful recruiting is a solution that Japanese companies pursue to try to minimize hiring employees that will become dissatisfied and quit. Companies tend to interview more candidates for a given position and take longer to evaluate them than their American counterparts. Prospective managers are often interviewed by as many as eight people, Americans and Japanese. Most important, companies look for a particular mix of qualities that might make a candidate more likely to stay. Patience, adaptability, length of prior employment, and the ability to function as a team player are all virtues that executives say they look for when evaluating candidates.

Despite this careful recruiting process, many Japanese firms still experience a troubling turnover problem among American managers.

Nobou Ishizaka, chairman and chief executive of Toshiba America Inc., says that his turnover problem actually has two sides to it — high turnover and low turnover. "Good people with vigorous minds and ambitions leave," says Ishizaka. "But the people on the opposite end stay."

Japanese firms believe one solution to retaining capable employees is to teach them Japanese management practices and culture. Fujitsu America trains certain employees using the Fujitsu-cosponsored Japan-America Institute for Management Science. Some companies are consid-

Hitachi: The American imperative

When Tsuneo Tanaka came to America two years ago to assume leadership of Hitachi Ltd.'s U.S. sales and marketing subsidiary, Hitachi America Ltd., he did not believe the company would Americanize quickly. Morale was low among American managers, turnover was high, and "policies were made in Japan," says Tanaka. And unfortunately, he says, Hitachi's executives in Japan did not realize the importance of Americanization.

Now, they realize it. Trade friction, says Tanaka, has accounted for a new sense of urgency to Americanize at Hitachi. It resulted in a major reorganization of the U.S. operations and paved the way for a series of steps that Tanaka hopes will Americanize his $1 billion subsidiary. Tanaka has his new marching orders: "I have to operate this company as an American company."

Last April, Hitachi consolidated the company's five U.S. manufacturing subsidiaries under Tanaka's organization, yanking them away from the direct control of their Japan-based parent factories. This reorganization was done to allow Hitachi America to eventually become a standalone company, says Tanaka.

After integrating the manufacturing groups into Hitachi America, Hitachi's goal is to establish a research and development group in the United States that would develop products for the American market. This, Tanaka says, will occur within the next three years. Currently, Hitachi has no U.S.-based R&D.

In manufacturing, the company recently opened a 100-employee disk-drive assembly plant and plans to begin manufacturing private branch exchanges (PBXs) in Atlanta this year. The Irving, Texas, integrated-circuit assembly plant, however, remains void of semiconductor production equipment, pending a recovery in the semiconductor market. Production, which was scheduled for early 1987, is now planned tentatively for 1988. "We must be very careful," says Tanaka. "This is a big investment."

But the big change, says Tanaka, will occur during the next five years as Hitachi America replaces the Japanese general managers of its 10 sales and marketing subsidiaries with American managers. Already, Tanaka has promoted Americans in four divisions to the rank of deputy general manager, and he expects to promote two of these managers to the position of general manager this year. When this happens, Tanaka will place a Japanese national in the role of deputy general manager, to provide "support" to the American head. □

Hitachi Ltd.

Worldwide 1986 sales:
$34.6 billion
(Fiscal year ended March 1987)

Number of employees worldwide: **164,000**

U.S sales:

1986 **$3.7 billion**

1985 **$3.5 billion**

Total number of employees in U.S.: **4,000**

Source: Hitachi America Ltd.

TSUNEO TANAKA, president of Hitachi America: "I have to operate this company as an American company"

ering expanding their training programs to include all managers upon hiring.

But, recruiting and training does not solve the problem of Americanization. Even if companies were to solve their problems with attracting and retaining top-notch American managers, the problems concerning handing the reins of control over to Americans would still exist.

The formidable task

The one step that many believe is necessary for Americanization is for Japanese companies to change the structure of their U.S. subsidiaries to make them less integrated with the Japanese parent. Only by loosening the structural ties between the Japanese parent and its U.S. subsidiaries will any single group of management be able to run the subsidiary.

By far, this is the most formidable task. Today, even though Japanese companies have brought some of their manufacturing processes over to the States, most of it, along with virtually all of the research and development, remains in Japan.

But the problem is not solved merely by moving more manufacturing to the United States. So far, Japanese strategies of establishing assembly operations in the United States have included increasing the interaction between the parent and subsidiary instead of decreasing it. Now, for example, interaction is required between the assembly operation in America, and the main plant and the R&D groups in Japan.

Some experts, who are doubtful about the prospects for Americanization, do not think that the Japanese will ever let Americans run manufacturing, even if they were to make their U.S. operations a standalone unit. They say that the Japanese believe that they do it better, and experts concede that they probably do.

Toshiba America's chairman Ishizaka agrees that the only solution to the problem of Americanization is to turn subsidiaries into "self-contained, self-standing businesses." He is also pessimistic about this happening soon and is critical of his competitors' that claim to be Americanizing.

Ishizaka says that Americanization will only occur after Japan changes. He believes that Japan's homogeneous people and culture prevent it from handing the control of its companies over to someone else. America's diversity, in contrast, has allowed U.S. companies to move further in "Japanizing" their Japanese subsidiaries.

"Americanization of Japanese companies is a reflection of what's happening in Japan," says chairman Ishizaka. "There's no short-term solution. I really think it is premature to talk about Americanization." □

Toshiba: A standalone objective

"Of course we plan for greater local production," says Nobou Ishizaka, chairman and chief executive of Toshiba Ltd.'s $2 billion U.S. subsidiary, Toshiba America Inc. "We plan for promoting, and getting good Americans. But right now, that situation, for various different reasons, looks pretty gloomy."

The reason that chairman Ishizaka is not bullish about the prospects for Americanization at Toshiba America, or any other Japanese company for that matter, is that merely hiring Americans for top posts at their subsidiaries is putting the cart before the horse. Subsidiaries cannot become truly Americanized until they become "a self-contained, self-standing business," he says.

Americanization at U.S. sales subsidiaries was proceeding well until Japanese companies started manufacturing in the United States, according to Ishizaka. Then management control by Japan increased, instead of decreased. "Japan planned the factory and controlled the supply of crucial components," says Ishizaka. American managers had to settle for far less authority than they would at an American company.

Consequently, subsidiaries now have difficulty keeping good American managers. Also, not having the ability to offer stock options deprives them of a key tool necessary to attract and hold first-rate American executives.

The result is an environment unsuited for attracting and keeping good, capable managers, Ishizaka believes.

Instead of merely trying to hire more American managers, Ishizaka says, "the objective should be to make the American operation one in which Americans would be happy to work, American investors would be happy to buy shares, and the American public would like to deal with. That is real Americanization."

Until this happens, Ishizaka says, "it is too premature to talk about Americanization. It is only talk." □

Toshiba Ltd.

Worldwide 1986 sales:
$23.6 billion
(Fiscal year ended March 1987)

Number of employees worldwide: **120,000**

U.S sales:

1986 [redacted] **$2.0 billion**

1985 [redacted] **$1.5 billion**

Total number of employees in U.S.: **3,120**

Source: Toshiba Ltd.

NOBOU ISHIZAKA, chairman and chief executive of Toshiba America: "We plan for promoting, and getting good Americans. But right now, that situation, for various different reasons, looks pretty gloomy"

DISTRIBUTION

Industrial distributors are cautiously optimistic

An exclusive ELECTRONIC BUSINESS survey suggests all the signs are pointing to a continued second-half upturn

By Bruce C.P. Rayner

Cautious optimism. That is the best way to describe the mood of industrial distributors.

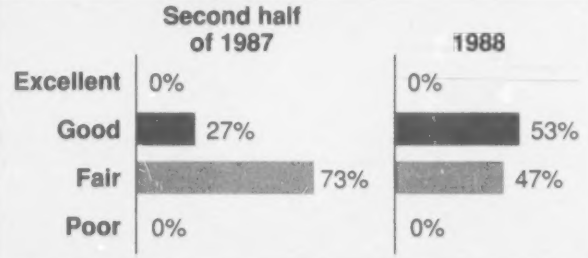
A recent in-depth survey by ELECTRONIC BUSINESS of 15 leading U.S. distributors confirms industry estimates that revenue will grow about 10% this year and 10% to 15% in 1988. The survey was conducted this spring by the magazine's in-house research staff.

About two-thirds of the respondents to our questionnaire — which was mailed to 50 distributors in all — indicated that the economic outlook for the second half of 1987 will be fair. And about half of those responding described their expectations for the second half as good. Much of the optimism is based on expectations that the computer industry will continue to strengthen, along with several strong semiconductor markets, including 32-bit microprocessors and application-specific integrated circuits (ASICs).

Meanwhile, leadtimes and book-to-bill ratios are stretching out, and many distributors surveyed expect component prices to rise in the second half of 1987. Similarly, many

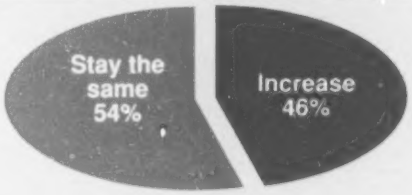
ECONOMIC OUTLOOK

How would you characterize the economic outlook for:



MARGINS

In the next six months, do you expect gross margins to:



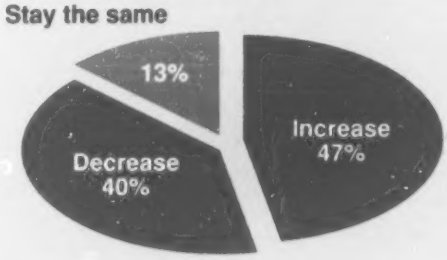
PRICES

Indicate what you expect prices will do in the next six months:

	Increase	Decrease	Stay the same
Semiconductors	84%	8%	8%
256K DRAMs	75%	25%	0%
Connectors	72%	0%	28%
Electromechanical components	46%	0%	54%
Other passives	33%	0%	67%

INVENTORIES

Do you expect your company's inventory levels to increase or decrease in the next six months?



Source: ELECTRONIC BUSINESS

distributors report that the grey market is drying up for some Japanese commodity components. Opinion is split over whether gross margins will hold steady or increase, with 54% of respondents expecting theirs to remain the same.

As long as there are no shortages of components and distributors remain fiercely price competitive, margins will not rise, respondents said. This is likely in the near term. Also contributing to the downward pressure on margins is the shift to computer systems sales. Systems generally carry lower margins than components. Possibly more important is the excess capacity in most component manufacturing plants. As long as capacity remains underutilized, margins could hover in the low 20% range indefinitely.

Another indicator pointing in the wrong direction for distributors is the low number of annual inventory turns. According to the survey results, distributors' annual inventory turns ranged between 2.5 and 5.5 for fiscal year 1986. Clarke Walser, a senior vice president at The Chicago Corp., estimates an average annual inventory turn rate at a low 3.0 for calendar 1986.

With such low inventory turns and stagnant gross margins, Walser doubts whether any distributor can uearn a satisfactory return on inventory investment. He worries that distributors will be unable to generate enough capital when the recovery hits full force and they need to increase inventory. Nearly half of the distributors surveyed expect to increase inventory levels in the next six months, 40% expect them to decrease and 13% expect them to stay the same.

Robert Schrader, president of Port Chester, New York-based Zeus Components Inc., a $92 million distributor in the military market, argues, too, that a turn rate of 4.0 is probably optimal. Anything less gives a low return on assets, while anything higher interferes with customer service, he says.

With increasing trade friction between the United States and Japan, some original equipment manufacturers are also building inventory of Japanese commodity semiconductors

Top 15 U.S. industrial electronics distributors

Rank 1986	Rank 1985	Company	Calendar 1986 sales ($ thousands)	Percentage change from 1985	Sales breakdown by products: Computers and peripherals	Active components	Other
1	1	Avnet Electronic Marketing Group*	$1,146,420	+11.8%	27%	43%	30%
2	2	Arrow Electronics	501,795	+0.3%	29%	52%	19%
3	3	Lex Electronics	501,000	+38.4%	16%	57%	27%
4	4	Ducommun Electronics	386,600	+11.3%	31%	50%	19%
5	5	Hall-Mark Electronics	385,000	+18.4%	25%	50%	25%
6	6	Pioneer-Standard Electronics	276,000	-2.8%	32%	42%	26%
7	8	Marshall Industries	269,155	+15.5%	20%	45%	35%
8	7	Premier Industries	267,169	+0.8%	NA		
9	9	Wyle Electronics	225,000	+13.2%	30%	60%	10%
10	10	Future Electronics	217,400	+9.8%	11%	64%	25%
11	12	Anthem Electronics	167,216	+61.4%	30%	70%	
12	11	Bell Industries	158,000	+15.4%	7%	53%	40%
13	13	Zeus Components	92,000	+13.9%		95%	5%
14	-	Milgray Electronics	62,004	NA		57%	26%
15	-	TTI	60,707	NA			

* Consists mainly of Hamilton/Avnet and Time Electronics

NA = Not available

as insurance against a possible break in supply. Much of this buffer stock comes from distribution. While prices are expected to increase in general, a full 75% of those surveyed expect the prices of 256K dynamic RAMs to increase in the second half of 1987. Most of the distributors surveyed carry a miniscule quantity of Japanese product (averaging around 1%) and the majority of them expect to keep the inventory of Japanese product constant over the next two years.

Over half expect the U.S. government's "get-tough" trade strategy to benefit the domestic distribution market because, in the near term, shortages always push margins up, creating windfall profits. But in the long run, many distributors agree that additional market uncertainty is unhealthy. The U.S. government's actions only create inequity and instability, complains one distributor.

Diversifying

To counter uncertainty, many distributors are diversifying their product offerings. The top-ranked growth markets for the second half of 1987 are ASICs, computer systems and 32-bit microprocessors, in that order. Top-ranked Avnet Inc., the New York City-based parent of Hamilton/Avnet and Time Electronics, expects its relationship with Digital Equipment Corp. to bring in $500 million in system sales for Avnet by 1990. Other top distributors are following Avnet's lead in the systems market.

As for 32-bit microprocessors, it is only a question of time before they become standard commodity items. As they infiltrate more systems, they are expected to generate both systems and component sales for distributors. Similarly, distributors are getting more involved in ASIC design centers in order to cater to the demand for custom chips by smaller original equipment manufacturers. But profits from ASICs do not materialize until the design enters production. For many distributors, acceptable return on investment in ASIC centers is still a year or two away.

Researched by Nancy McSharry, assistant editor.

Fiscal 1986 sales ($ thousands)	Gross margins	Profit or loss before taxes ($ thousands)	Stocking locations	Number of employees	Inventory turns (per year)	Average receivables (in days)	Fiscal year ended
$1,098,200	25.0%	$17,500	121	9,250	NA	NA	6/86
501,795	21.0%	-28,267	43	2,125	3.3	54	12/86
501,000	23.0%	-4,500	50	1,500	3.5	NA	12/86
386,600	NA	-9,100	30	1,300	3.7	NA	12/86
385,000	NA	6,400	32	1,350	3.8	50	12/86
285,000	23.5%	4,275	26	1,144	3.1	46	3/87
244,777	24.0%	4,962	32	1,083	NA	NA	5/86
263,208	18.9%	4,973	NA	3,600	NA	NA	5/86
227,000	22.7%	5,044	13	661	3.3	58	1/87
217,400	NA	3,130	11	1,480	2.5	50	12/86
168,745	23.0%	5,647	17	440	4	48	3/87
143,000	25.8%	4,290	39	775	NA	49	6/86
90,400	22.0%	746	2	344	NA	NA	9/86
62,004	24.5%	209	12	300	3.2	49	12/86
60,787	NA	NA	6	250	NA	NA	12/86

Source: ELECTRONIC BUSINESS

FINANCE

Capital spending: Down in '86, up in '87

Computer and office equipment makers topped the list of leading capital spenders in electronics last year

By Al Furst
and Linda Stallmann

Capital spending by the top 100 publicly owned electronics companies declined sharply last year. But a number of forecasters are predicting a modest rise this year and an even stronger year in 1988.

In 1986, the top 100 companies on the ELECTRONIC BUSINESS 200 doled out $13.8 billion for capital improvements. That was down considerably from the $17.1 billion total that the top 100 spent in 1985.

The downturn in spending virtually took place across the board in every industry segment of electronics, according to an analysis of all 200 companies on our annual ranking. The leading manufacturers of communications equipment spent 22.6% fewer dollars on capital equipment in 1986, compared with 1985; distributors spent 30.3% less; spending by nonsemiconductor component makers was down 22.6%; semiconductor houses lowered capital expenses 33.3%; production equipment vendors spent 22.9% less; software firms' spending declined 30.3%; office equipment makers spent 23.8% fewer dollars; minicomputer manufacturers lowered capital spending by 25%; microcomputer makers lowered expenses 27.3%; mainframe makers' spending was down 21.3%; and suppliers of military electronics spent 19.2% less money on capital improvements. The only industry segment, in fact, that showed an increase in capital spending were peripherals manufacturers. These automation-conscious companies increased capital spending by roughly 9% last year, gearing up for what is anticipated to be a return to normalcy in the personal computer industry — in 1987, 1988 and beyond.

In sheer volume, however, it was the big computer and office equipment makers that topped this year's list of leading capital spenders in electronics. The top 10 spenders, which together accounted for 69.6% of all the spending that took place last year by the top 100 companies in the industry, was headed by IBM, followed by Xerox Corp., Digital Equipment Corp., Unisys Corp., Hewlett-Packard Co., NCR Corp. and Honeywell Inc. — giants all.

> In 1986, the top 100 U.S. electronics companies doled out $13.8 billion for capital improvements, down considerably from the $17.1 billion they spent in 1985

The volume of spending, however, can frequently be deceiving. IBM, for example, had revenue of $51.2 billion in fiscal 1986. So it is not all that surprising, perhaps, that the company spent a whopping $4.6 billion on capital improvements overall. What many analysts would argue is a more revealing figure is the ratio of capital expenditures to net cash flow: profits, plus depreciation after dividends.

As Jerry Wasserman, an analyst at Arthur D. Little Inc., points out: "This indicator shows how a company uses internally generated funds to support its capital expenditures on new plant and equipment. Clearly, in our increasingly competitive environment, investments in plant and equipment are critical for a company if it is to remain competitive in this ever cost-conscious industry. Our experience has been that companies that invest between 100% and 103% net cash flow after dividends are making prudent use of their funds for growth. Anything below 100% suggests that the company is being milked for profits."

On the whole, however, it appears that the industry can look forward to an upturn in capital spending this year — which is good news for capital equipment makers and for the industry in general. This forecast, analysts point out, is not just wishful thinking but is grounded in well-respected statistical analysis generated annually by the U.S. Department of Commerce. The Commerce Department makes these projections based on its survey of leading U.S. manufacturers. Historically, economists say that the surveys are fairly accurate because they reflect the spending plans of over half of monies expended each year for capital spending in the United States.

This year, the Commerce Department is predicting that manufacturers of electrical machinery, excluding computers, will see an 11% rise in capital spending, to $15.6 billion, from $14.1 billion in 1986. Meanwhile, nonelectrical machinery makers, which include computer manufacturers, are telling the Commerce Department that they plan to spend $13.07 billion this year on capital improvements, down only 4% from $13.62 billion in 1986. □

Top capital spenders

Fiscal 1986 figures

Rank	Company (EB 200 rank)	Capital expenditures ($ millions)	Capital expenditures as a percentage of revenue	Change from previous year	Capital expenditures to net cash flow after dividends	Total company revenue ($ millions)	Fiscal year ended
1	**IBM** (1)	$4,620.0	9.0%	-28.1%	85.4%	$51,250.0	12/86
2	**Xerox** (6)	1,032.0	11.0%	8.5%	108.2%	9,355.0	12/86
3	**GM Hughes Electronics** (4)	700.6	6.7%	-5.8%	115.4%	10,440.0	12/86
4	**Motorola** (11)	593.0	10.1%	-18.0%	103.9%	5,888.0	12/86
5	**DEC** (5)	564.2	7.4%	-1.3%	56.3%	7,590.4	6/86
6	**Unisys** (7)	553.3	7.4%	23.0%	221.1%	7,432.4	12/86
7	**Hewlett-Packard** (8)	499.0	7.0%	-21.0%	63.9%	7,102.0	10/86
8	**Texas Instruments** (13)	445.8	9.0%	-13.5%	110.0%	4,974.0	12/86
9	**NCR** (14)	360.8	7.4%	16.8%	68.7%	4,881.6	12/86
10	**Honeywell** (12)	281.4	5.2%	-42.9%	190.9%	5,378.2	12/86
11	**North American Philips** (18)	239.1	5.3%	42.2%	159.4%	4,531.6	12/86
12	**Wang Laboratories** (22)	233.6	8.8%	-54.5%	92.8%	2,642.5	6/86
13	**Pitney Bowes** (36)	208.7	10.5%	8.5%	88.0%	1,986.7	12/86
14	**Control Data** (21)	156.7	4.7%	-2.2%	-140.4%	3,346.7	12/86
15	**Intel** (48)	154.8	12.2%	-34.5%	382.6%	1,265.0	12/86
16	**AMP** (40)	151.7	7.8%	-23.6%	72.7%	1,933.1	12/86
17	**Advanced Micro Devices** (71)	136.9	23.8%	-50.4%	179.7%	576.1	3/86
18	**Data General** (46)	129.8	10.2%	-22.3%	203.8%	1,268.0	9/86
19	**Cray Research** (73)	119.2	20.0%	41.0%	65.7%	596.7	12/86
20	**National Semiconductor** (39)	116.9	7.9%	-70.8%	5,082.6%	1,478.1	5/86
21	**Harris** (29)	116.6	5.3%	-43.4%	73.4%	2,216.6	6/86
22	**Amdahl** (52)	114.5	11.8%	16.5%	100.4%	966.3	12/86
23	**Telex** (62)	101.2	14.6%	-39.1%	98.3%	695.0	3/86
24	**M/A-COM** (75)	98.0	17.0%	20.5%	294.3%	577.5	9/86
25	**Prime Computer** (58)	90.6	10.5%	22.4%	83.1%	860.2	12/86
26	**Singer** (41)	90.6	5.2%	-20.0%	79.2%	1,752.2	12/86
27	**Intergraph** (72)	78.4	12.9%	61.1%	85.8%	605.7	12/86
28	**General Instrument** (57)	73.3	9.2%	-18.5%	653.7%	794.3	2/86
29	**LSI Logic** (151)	70.5	36.3%	-14.2%	200.5%	194.3	12/86
30	**Tektronix** (44)	68.5	5.0%	-13.6%	66.2%	1,357.2	5/86
31	**Perkin-Elmer** (50)	68.5	5.3%	8.0%	72.0%	1,290.6	7/86
32	**Apple Computer** (31)	66.6	3.5%	23.3%	73.6%	1,902.0	9/86
33	**Tandem Computers** (60)	65.0	8.5%	-3.8%	60.8%	767.8	9/86
34	**Zenith Electronics** (34)	61.0	3.2%	8.0%	203.3%	1,892.1	12/86
35	**Gould** (53)	57.2	6.3%	-44.9%	68.6%	908.8	12/86
36	**Tandy** (19)	55.0	1.8%	-30.9%	21.7%	3,035.7	6/86
37	**Xidex** (84)	52.5	12.1%	152.9%	80.9%	432.3	6/86
38	**COMPAQ Computer** (69)	50.5	8.1%	38.3%	87.7%	625.2	12/86
39	**Varian Associates** (56)	50.1	5.6%	-46.8%	354.9%	891.1	9/86
40	**E-Systems** (51)	47.8	4.2%	-14.8%	67.3%	1,145.5	12/86
41	**Loral** (68)	46.2	7.0%	10.2%	65.7%	663.8	3/86
42	**Apollo Computer** (86)	41.5	10.6%	-47.0%	110.3%	391.7	12/86
43	**Molex** (91)	40.1	13.7%	-15.9%	69.6%	291.9	6/86
44	**Seagate** (66)	38.7	8.4%	39.6%	71.9%	459.8	6/86
45	**Analog Devices** (95)	36.7	11.0%	-46.6%	71.0%	334.4	10/86
46	**Sun Microsystems** (93)	36.2	17.2%	142.5%	206.4%	210.1	6/86
47	**Tracor** (76)	36.2	5.7%	-21.3%	100.9%	632.1	12/86
48	**Convergent** (101)	34.6	11.3%	76.3%	-310.1%	305.8	12/86
49	**Monolithic Memories** (140)	33.1	16.2%	-37.7%	87.8%	204.9	9/86
50	**Storage Technology** (67)	32.3	4.6%	-54.2%	27.7%	696.0	12/86

Source: ELECTRONIC BUSINESS

(continued)

Top capital spenders (continued)

Fiscal 1986 figures

Rank	Company (EB 200 rank)	Capital expenditures ($ millions)	Capital expenditures as a percentage of revenue	Change from previous year	Capital expenditures to net cash flow after dividends	Total company revenue ($ millions)	Fiscal year ended
51	**Teradyne** (100)	$30.4	9.9%	-17.8%	114.4%	$306.1	12/86
52	**CTS** (125)	27.1	11.0%	-20.7%	-156.8%	245.5	12/86
53	**Datapoint** (98)	26.3	8.1%	-60.4%	122.6%	325.2	7/86
54	**Computervision** (79)	24.8	5.0%	-33.4%	47.9%	494.7	12/86
55	**Augat** (113)	24.0	9.2%	-3.1%	-1,064.3%	260.4	12/86
56	**Avnet** (47)	22.6	1.6%	-44.6%	75.4%	1,415.6	6/86
57	**MiniScribe** (158)	21.1	11.4%	305.7%	79.0%	184.9	12/86
58	**Paradyne** (112)	20.5	7.9%	-54.5%	-165.1%	261.1	12/86
59	**Avantek** (144)	20.1	9.7%	-51.4%	71.7%	208.2	12/86
60	**DSC Communications** (102)	19.1	6.3%	-69.9%	51.7%	304.0	12/86
61	**Scientific-Atlanta** (81)	17.6	3.7%	13.7%	1,731.5%	469.1	6/86
62	**Bolt Beranek and Newman** (148)	17.3	9.7%	4.3%	88.1%	178.0	6/86
63	**Spectra-Physics** (142)	16.2	7.7%	14.1%	155.2%	210.1	9/86
64	**Western Digital** (89)	16.2	5.8%	-22.8%	47.2%	279.4	6/86
65	**Micropolis** (138)	16.1	7.6%	101.5%	60.7%	213.1	12/86
66	**General DataComm** (156)	16.0	9.0%	-28.1%	131.3%	178.0	9/86
67	**Lotus** (106)	15.5	5.5%	-27.3%	25.4%	282.9	12/86
68	**Diebold** (94)	14.9	3.6%	58.1%	54.0%	413.7	12/86
69	**Compugraphic** (92)	14.6	4.3%	-39.6%	80.5%	341.1	12/86
70	**Microsoft** (114)	14.1	7.1%	114.5%	31.3%	197.5	6/86
71	**Watkins-Johnson** (118)	13.6	5.3%	35.5%	56.7%	255.4	12/86
72	**Electrospace Systems** (161)	13.4	9.3%	36.3%	85.0%	145.0	3/86
73	**Savin** (108)	13.4	3.7%	-33.9%	78.7%	362.7	12/86
74	**Kollmorgen** (107)	12.5	3.9%	-35.1%	-170.5%	319.2	12/86
75	**Dynatech** (105)	12.4	4.8%	5.4%	43.9%	256.7	3/86
76	**Recognition Equipment** (124)	12.0	5.0%	-59.1%	59.1%	241.8	10/86
77	**UCCEL** (188)	11.8	8.3%	-18.6%	41.5%	141.6	12/86
78	**Ducommun** (87)	11.7	2.6%	-26.0%	-86.5%	455.2	12/86
79	**Applied Materials** (178)	11.5	7.7%	-10.7%	128.2%	149.3	10/86
80	**GenRad** (146)	11.5	5.6%	-70.7%	-84.6%	204.3	12/86
81	**Data Card** (175)	11.1	7.2%	10.2%	75.0%	153.6	3/86
82	**AVX** (149)	11.1	5.7%	-55.5%	83.1%	195.4	12/86
83	**SCI Systems** (80)	10.9	2.3%	24.7%	49.7%	470.2	6/86
84	**Marshall Industries** (109)	10.8	4.4%	17.4%	223.4%	244.8	5/86
85	**Applied Magnetics** (194)	10.4	8.1%	2.9%	80.8%	128.1	9/86
86	**Andrew** (147)	10.2	5.2%	-43.4%	47.6%	197.7	9/86
87	**Mentor Graphics** (164)	10.2	5.9%	-54.7%	52.3%	173.5	12/86
88	**ADC Telecommunications** (186)	10.1	7.0%	36.9%	53.3%	143.7	10/86
89	**Unitrode** (182)	9.8	6.5%	-23.1%	249.4%	149.4	1/87
90	**Dataproducts** (90)	9.1	2.6%	-58.2%	-51.6%	353.8	3/86
91	**International Rectifier** (177)	9.1	6.2%	-64.9%	186.2%	145.2	6/86
92	**Ashton-Tate** (141)	9.1	4.3%	-58.0%	21.6%	210.8	1/87
93	**Fluke** (143)	9.0	4.3%	-18.6%	41.8%	209.0	9/86
94	**Coherent** (193)	8.9	6.4%	4.8%	253.2%	138.2	9/86
95	**Wyse Technology** (131)	8.8	5.3%	57.8%	61.2%	166.4	3/86
96	**Cubic** (97)	8.6	2.6%	14.1%	139.5%	337.8	9/86
97	**Micom Systems** (154)	8.4	4.4%	-51.8%	44.1%	189.5	3/86
98	**Digital Communications** (176)	8.3	6.0%	-47.7%	33.9%	137.9	6/86
99	**Tandon** (127)	8.1	3.8%	-35.9%	-17.0%	214.1	9/86
100	**Wyle Laboratories** (134)	7.9	2.6%	118.9%	136.0%	307.0	1/87

Source: ELECTRONIC BUSINESS

(continued)

Top capital spenders by industry segments

Components

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
AMP	$151.7	16
Molex	40.1	43
CTS	27.1	52
Augat	24.0	55
Kollmorgen	12.5	74
AVX	11.1	82
Total	**$266.4**	

Capital equipment

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
Hewlett-Packard	$499.0	7
Tektronix	68.5	30
Perkin-Elmer	68.5	31
Varian Associates	50.1	39
Teradyne	30.4	51
Computervision	24.8	54
Spectra-Physics	16.2	63
Applied Materials	11.5	79
GenRad	11.5	80
Fluke	9.0	93
Totals	**$789.5**	

Communications

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
Motorola	$593.0	4
M/A-COM	98.0	24
General Instrument	73.3	28
Paradyne	20.5	58
Avantek	20.1	59
DSC Communications	19.1	60
Scientific-Atlanta	17.6	61
Bolt Beranek and Newman	17.3	62
General DataComm	16.0	66
Dynatech	12.4	75
Andrew	10.2	86
ADC Telecommunications	10.1	88
Micom Systems	8.4	97
Digital Communications	8.3	98
Total	**$924.4**	

Computer-based systems

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
Hewlett-Packard	$499.0	7
Honeywell	281.4	10
Intergraph	78.4	27
Compugraphic	14.6	69
Recognition Equipment	12.0	76
Data Card	11.1	81
Coherent	8.9	94
Total	**$905.5**	

Distributors

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
Avnet	$22.6	56
Ducommun	11.7	78
Marshall Industries	10.8	84
Wyle Laboratories	7.9	100
Total	**$53.0**	

Government

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
GM Hughes Electronics	$700.6	3
Motorola	593.0	4
Texas Instruments	445.8	8
Honeywell	281.4	10
Harris	116.6	21
Singer	90.6	26
E-Systems	47.8	40
Loral	46.2	41
Tracor	36.2	47
Watkins-Johnson	13.6	71
Electrospace Systems	13.4	72
Cubic	8.6	96
Total	**$2,393.8**	

Mainframes

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
IBM	$4,620.0	1
Unisys	553.3	6
NCR	360.8	9
Control Data	156.7	14
Cray Research	119.2	19
Amdahl	114.5	22
Total	**$5,924.4**	

Microcomputers

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
IBM	$4,620.0	1
Apple Computer	66.6	32
Tandy	55.0	36
COMPAQ Computer	50.5	38
SCI Systems	10.9	83
Total	**$4,803.0**	

Minicomputers

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
IBM	$4,620.0	1
DEC	564.2	5
Hewlett-Packard	499.0	7
Data General	129.8	18
Telex	101.2	23
Prime Computer	90.6	25
Tandem Computers	65.0	33
Gould	57.2	35
Apollo Computer	41.5	42
Sun Microsystems	36.2	46
Convergent Technologies	34.6	48
Total	**$6,239.3**	

Office equipment

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
IBM	$4,620.0	1
Xerox	1,032.0	2
NCR	360.8	9
Wang Laboratories	233.6	12
Pitney Bowes	208.7	13
Harris	116.6	21
Datapoint	26.3	53
Diebold	14.9	68
Savin	13.4	73
Total	**$6,626.2**	

Peripherals

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
Xidex	$52.5	37
Seagate Technology	38.7	44
Storage Technology	32.3	50
MiniScribe	21.1	57
Micropolis	16.1	65
Applied Magnetics	10.4	85
Dataproducts	9.1	90
Wyse Technology	8.8	95
Tandon	8.1	99
Total	**$197.0**	

Semiconductors

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
Motorola	$593.0	4
Texas Instruments	445.8	8
Intel	154.8	15
Advanced Micro Devices	136.9	17
National Semiconductor	116.9	20
LSI Logic	70.5	29
Gould	57.2	35
Analog Devices	36.7	45
Monolithic Memories	33.1	49
Western Digital	16.2	64
Unitrode	9.8	89
International Rectifier	9.1	91
Total	**$1,680.0**	

Software

Company	Fiscal 1986 capital expenditures ($ millions)	Rank
Lotus Development	$15.5	67
Microsoft	14.1	70
UCCEL	11.8	77
Mentor Graphics	10.2	87
Ashton-Tate	9.1	92
Total	**$60.7**	

Source: ELECTRONIC BUSINESS

SMALL-PACKAGE CARRIERS

Air shippers are now manufacturing partners

The rise of the air freight industry has revolutionized the way electronics companies buy and sell their products

At one time, overnight delivery for electronics and computer manufacturers was limited by the range that an executive could drive his station wagon to deliver a part that a customer demanded. Today, overnight delivery and the use of air freight has become an integral part of a company's manufacturing plans and often provides a key link in a company's just-in-time delivery strategy.

ELECTRONIC BUSINESS recently surveyed 1,000 manufacturing managers regarding their attitudes and preferences toward small-package carriers, including air shippers, ground shippers, and both air and ground shippers. We received 101 responses for a 10% response rate.

Federal Express Corp. proved to be the the most commonly used small-package carrier, followed closely by the United Parcel Service and more distantly by Emery Worldwide. Of those companies using more than one vendor, United Parcel proved to be the preferred vendor with Federal Express a close second. When those responding were asked to rate their preferred vendors, Federal Express came out on top, overall, based on ratings in price, speed of delivery, service and reliability.

With parts delivery a vital cog in the manufacturing link, price has become a secondary consideration for many manufacturing managers. "Our parcel carrier is an extension of our business and must be perceived by our customers as a 'quality' carrier," according to one survey respondent. "Dependability and customer satisfaction is our main concern," another respondent said.

Those comments were borne out in the survey findings which revealed that reliability and speed of delivery was by far a more important factor than price or variety of services offered. The electronics industry, with its heavy use of small-size, low-weight, and high-value components is particularly well-suited for small-package carriers. The survey found that components were what was typically being shipped by the respondents rather than equipment or documents.

The respondents also felt more comfortable using the major carriers rather than smaller companies or the U.S. Postal Service. □

The carriers most used by the respondents

(In order of preference)

1. Federal Express
2. United Parcel Service
3. Emery Worldwide
4. DHL Worldwide Express
5. U.S. Postal Service
6. Airborne Express
7. Purolator Courier
8. Burlington Northern Air Freight
9. CF Airfreight
10. WTC Air Freight

Source: ELECTRONIC BUSINESS

Are your small-package freight costs rising or falling?

Source: ELECTRONIC BUSINESS

What is the most important factor in determining which carrier to use?

Source: ELECTRONIC BUSINESS